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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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12/17/2001

Isao Ota

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25944 7590 10/22/2008

OLIFF & BERRIDGE, PLC

P.O. BOX 320850

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EXAMINER

ANGADI, MAKI A

ART UNIT

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1792

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DELIVERY MODE

10/22/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/015,675	<b>Applicant(s)</b> OTA ET AL.	
	<b>Examiner</b> MAKI A. ANGADI	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 10, 12, 13 and 19-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10, 12, 13 and 19-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 10, 12, and 13 and 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tastu et al. (US 4,769,073) in view of Ashley et al. (EP 444470 A1) and further in view of Aozasa (US 6,171,572 B1) and Brancaleoni (US Patent No. 5,264,010)

*As to claims 10, 19, and 22, Tastu teaches an admixture that contains a cerium*

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oxide and lanthanide salt and that has a pH of greater than 6 but not less than 10 (column 7, line 19 - column 8, line 7). The aforementioned reads on and encompasses, a solution having a pH of 3 to 6 or 8 to 10, in claims 10, 19, and 22.

Tastu also teaches an admixture with a solution of a cerium salt, an aqueous solution of a salt of at least one trivalent rare earth, which includes lanthanum, praseodymium, and neodymium (column 4, lines 14-29) and lists a composition comprising: ceric oxide, lanthanum oxide, and neodymium oxide and having a mean particle diameter of  $1.5 \pm 1 \mu\text{m}$ , in EXAMPLE 1 (column 12, lines 13-37). Tatsuo discloses ceric oxide in the form of the composition described in French Pat. No. 2,549,846 and such compositions comprise a crystallographic phase of  $\text{CeO}_2$  type... and corresponding to the formula  $\text{Ln}_{2-x}\text{Ce}_x\text{Si}_2\text{O}_7$  in which..., x is greater than or equal to 0 and less than 2" (column 5, lines 7-15). The aforementioned further reads on, a solution comprising particles dispersed in a medium, wherein; the particles comprise as a main component crystalline cerium oxide of the cubic system and as an additional component a lanthanum compound, neodymium compound or a combination thereof; and the additional component is contained in an  $X/(\text{Ce} + X)$  molar ratio of 0.005 to 15 in which X is lanthanum atoms, neodymium atoms or a combination thereof.

The aforementioned also reads on, an abrasive comprising a sol including particles dispersed in an aqueous medium, wherein; the particles comprise as a main component crystalline cerium oxide of cubic system and as an additional component a lanthanum compound, neodymium compound or a combination thereof; the additional component is contained in an  $X/(\text{Ce} + X)$  molar ratio of 0.005 to 0.15 in which X is lanthanum

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atoms, neodymium atoms or a combination thereof, in claim 10, 19, and 22; wherein the additional component is a lanthanum compound, in claim 12, 20, and 23; wherein the additional component is a neodymium compound, in claim 13, 21, and 24; and Tastu differs in failing to teach a particle size of 2 to 200 m<sup>2</sup>/g, in claims 10, 19, and 22.

Ashley discloses a stable ceria composition of one or more of La, Nd or Y and the stabilized ceria retains a surface area of greater than 20 m<sup>2</sup>/g (Abstract), which encompasses a particle having a specific surface area of 2 to 200m<sup>2</sup>/g. Since Ashley illustrates the specific combination of particles having a surface area of 2 to 200 m<sup>2</sup>/g is known, then it would have been obvious to one having ordinary skill in the art at the time the invention was made to select any range of surface area as taught by Ashley, including Applicants' specifically claimed range of surface area for the purpose of forming a high surface area ceria composition by incorporating one or more of La or Nd to the composition (Ashley, Abstract).

Tastu in view of Ashley differs in failing to teach a solution wherein the particles have a particle size of 50 to 150 nm, in claims 10, 19, and 22.

Aozasa teaches, "... a cerium solution having an average colloidal particle size of 3 to 100 nm, and optionally one or more members selected from the group consisting of salts of yttrium, scandium, lanthanum, praseodymium, neodymium, samarium, europium, gadolinium, magnesium, calcium, barium, aluminum, titanium, and hafnium. • ." (column 3, lines 49) and "... a cerium solution having an average colloidal particle size of 3 to 100 nm, preferably 5 to 80 nm, more preferably 10 to 50 nm ....If the average colloidal particle size is smaller than 3 nm, production in industrial scale will be difficult

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(column 5, lines 52-59). Aozasa also teaches, cerium sol having a concentration of about 100 to 200 g/liter (~10 to 20 g/100 ml or 10-20 wt %), (column 6, lines 4-6).

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify the combination of abrasive materials as taught by Tatsu in view of Ashley, by using Aozasa's sol having a particle size of 3 to 100 nm which falls within the particle size range as claimed by applicants for the purpose of ease of production on an industrial scale (Aozasa, column 8, lines 42-45).

Tatsu in view of Ashley and Aozasa differ in failing to teach an abrasive for polishing a substrate comprising silica in an amount of 50 wt% or more, in claim 10; an abrasive for polishing a rock crystal, a quartz glass for a photomask, a semiconductor device or a hard disk made of glass, in claim 19; and an abrasive for polishing an organic film with the Chemical Mechanical Polishing method, an Inter Layer Dielectric (ILD), or a shallow trench isolation of a semiconductor device, in claim 22.

Since the combination of Tatsu in view of Ashley and Aozasa teaches Applicants' specifically claimed abrasive, then using the said combination in the same manner as claimed by Applicants would result the same in an abrasive for polishing a rock crystal, a quartz glass for a photomask, a semiconductor device or a hard disk made of glass; an organic film with the Chemical Mechanical Polishing method, an Inter Layer Dielectric (ILD), or a shallow trench isolation of a semiconductor device; and an organic film with the Chemical Mechanical Polishing method, an Inter Layer Dielectric (ILD), or a shallow trench isolation of a semiconductor device.

*As to claim 25*, Tatsu is silent about a solution that includes a water soluble polymer, an anionic surfactant, a nonionic surfactant and a cationic surfactant. However, Brancaleoni discloses the use of a solution that includes surfactant compounds e.g. non-ionic, anionic, cationic or amphoteric surfactants (col.5, lines 16-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use surfactant in the composition because Brancaleoni illustrates that surfactant compounds may provide an anti-scratching effect on the surface of the work piece (col.5, lines 6-11).

#### ***Response to Arguments***

4. Applicant's arguments filed on 8/26/2008 have been fully considered but they are not persuasive.

Applicants' arguments on page 2-4 of the reply with respect independent claims 10, 19 and 22 asserting that the combined reference of Tatsu, Ashley and Aozasa do not meet limitation of a solution having pH of 3-6 or 8-10 are not convincing. Tatsu describes a solution of the salt or salts of the rare earth or earths which is added continuously to the reaction medium in parallel with the basic solution (col.8, line 15-23) to achieve a pH that is greater than 6 but less than 10 (col.8, lines 3-7), therefore encompasses the range cited in independent claims 10, 19 and 22. Tatsu discloses that the polishing composition could be in the form of an aqueous suspension (col.5, lines 60-65, col.9, lines 21-23) or in the powder form (col.9, lines 28-30) and leads to a stable composition (col.10, lines 33-41) as illustrated in Examples 1-8 (cols.12-14). Ashley et

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al discloses the improvement of dispersion stability by uniform incorporation of the ceria stabilizer into the ceria precursor to form an intimate mixture (page 4, lines 3-8) as illustrated in Examples in 1-7.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAKI A. ANGADI whose telephone number is (571)272-8213. The examiner can normally be reached on 8 AM to 4.30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G. Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for



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published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Maki A Angadi/  
Examiner, Art Unit 1792

/Shamim Ahmed/  
Primary Examiner, Art Unit 1792